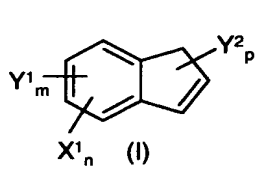
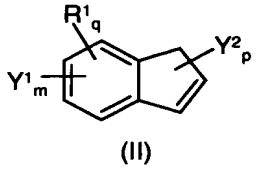
We claim:

1. A process for preparing indenes of the formula (II) from indenes of the formula (I) by reaction with compounds of the formula (III),



(I)



(II)

$$R^1_r M^1 X^2_t$$

(III)

where

X^1 is chlorine;

Y^1 are identical or different and are selected independently from the group consisting of C_1-C_{40} groups, e.g. C_1-C_{25}-alkyl, C_2-C_{25}-alkenyl, C_2-C_{25}-alkynyl, C_3-C_{15}-alkylalkenyl, C_3-C_{15}-alkylalkynyl, C_6-C_{24}-aryl, C_4-C_{24}-heteroaryl, C_5-C_{24}-alkylheteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, C_1-C_{12}-alkoxy, C_6-C_{24}-aryloxy, fluorinated C_1-C_{25}-alkyl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl, fluorinated C_7-C_{30}-alkylaryl, and the fluorine atom and heteroatom-containing groups, e.g. boron-, silicon-, nitrogen-, oxygen- or sulfur-containing groups, which may bear one or more substituents, where a plurality of groups Y^1 may also together form a cyclic aliphatic or aromatic ring system which may in turn be substituted and may contain heteroatoms;

Y^2 are identical or different and are selected independently from the group consisting of C_1-C_{40} groups, e.g. C_1-C_{25}-alkyl, C_2-C_{25}-alkenyl, C_2-C_{25}-alkynyl, C_3-C_{15}-alkylalkenyl, C_3-C_{15}-alkylalkynyl, C_6-C_{24}-aryl, C_4-C_{24}-heteroaryl, C_5-C_{24}-alkylheteroaryl, C_7-C_{30}-arylalkyl, C_7-C_{30}-alkylaryl, C_1-C_{12}-alkoxy, C_6-C_{24}-aryloxy, fluorinated C_1-C_{25}-alkyl, fluorinated C_6-C_{24}-aryl, fluorinated C_7-C_{30}-arylalkyl, fluorinated C_7-C_{30}-alkylaryl, and heteroatom-containing groups, e.g. boron-, silicon-, nitrogen-, oxygen- or sulfur-containing groups, which may bear one or more substituents, where a plurality of groups Y^2 may also together form a cyclic aliphatic or aromatic ring system which may in turn be substituted and may contain heteroatoms;

R^1 are identical or different and are selected independently from the group consisting of linear, branched or cyclic aliphatic hydrocarbon groups, e.g. C_1-C_{25}-alkyl which may in turn bear a variety of substituents, and groups bound via an aliphatic group to the indenyl skeleton, e.g. C_3-C_{15}-alkenylalkyl, C_3-C_{15}-alkynylalkyl, C_5-C_{24}-heteroarylalkyl, C_7-C_{30}-arylalkyl, C_2-C_{30}-alkyloxyalkyl, C_7-C_{30}-aryloxyalkyl, C_8-C_{30}-alkylarylalkyl, and other heteroatom-containing groups which are bound via an aliphatic group to the indenyl skeleton, e.g. boron-, silicon-, nitrogen-, oxygen- or sulfur-containing groups, and may bear one or more substituents;

M^1 is an element of group 1, 2, 12, 13 or 14 of the Periodic Table of the Elements;

X^2 are identical or different and are selected independently from the group consisting of halogen atoms, the hydroxy group, alkoxy groups, aryloxy groups, mesylate, tosylate and triflate;

m is an integer from 0 to 3;
n is an integer from 1 to 4;
p is an integer from 0 to 4;
q is an integer from 1 to 4;
r is 1, 2 or 3, and
t is 0, 1 or 2, where r + t corresponds to the oxidation number of M^1;

wherein the indenes of the formula (I) are reacted with appropriate aliphatic organometallic compounds of the formula (III) in the presence of a transition metal catalyst.

2. A process as claimed in claim 1, wherein
M^1 is Li, Mg, B or Zn, and
X^2 are identical or different and are selected independently from the group consisting of halogen atoms, the hydroxy group, alkoxy groups and aryloxy groups.

3. A process as claimed in claim 1 or 2, wherein at least one transition metal catalyst selected from the group consisting of nickel(II) acetylacetonate, [1,2-bis-(diphenylphosphino)ethane]nickel(II) chloride, [1,3-bis(diphenylphosphino)propane]nickel(II)chloride, [1,1'-bis(diphenylphosphino)ferrocene]nickel(II) chloride, bis(tributylphosphine)nickel(II) bromide, bis(tributylphosphine)nickel(II) chloride, bis(triphenylphosphine)nickel(II) chloride, bis(triphenylphosphine)dicarbonylnickel(0), [1,2-bis(dimethylphosphino)ethane]nickel(II) chloride, bis(triethylphosphine)nickel(II) chloride, bis(triphenylphosphine)palladium(II) chloride, tetrakis(triphenylphosphine)palladium(0), [1,2-bis(diphenylphosphino)-

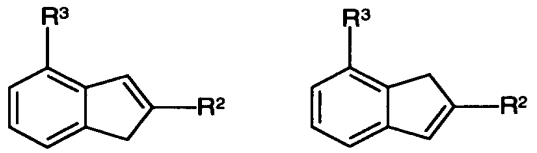
ethane]palladium(II) chloride and the [1,1'-bis(diphenylphosphino)ferrocene]nickel(II) chloride-methylene chloride complex is used.

4. A process as claimed in any of claims 1-3, wherein the transition metal catalyst used is [1,3-bis(diphenylphosphino)propane]nickel(II) chloride.

5. A process as claimed in any of claims 1-4, wherein the transition metal catalyst is added in an amount of from 0.01 to 5 mol%, based on chloroindene of the formula (I) used.

6. A process as claimed in any of claims 1-5, wherein the chloroindenes of the formula (I) which are used are selected from the groups consisting of:
4-chloro-1-indene; 5-chloro-1-indene; 6-chloro-1-indene; 7-chloro-1-indene; 2-methyl-4-chloro-1-indene; 2,7-dimethyl-4-chloro-1-indene; 2,4-dimethyl-7-chloro-1-indene; 2-methyl-5-chloro-1-indene; 2-methyl-6-chloro-1-indene; 2-methyl-7-chloro-1-indene; 2-ethyl-4-chloro-1-indene; 2-ethyl-5-chloro-1-indene; 2-ethyl-6-chloro-1-indene; 2-ethyl-7-chloro-1-indene; 2-propyl-4-chloro-1-indene; 2-propyl-5-chloro-1-indene; 2-propyl-6-chloro-1-indene; 2-propyl-7-chloro-1-indene; 2-i-propyl-4-chloro-1-indene; 2-i-propyl-5-chloro-1-indene; 2-i-propyl-6-chloro-1-indene; 2-i-propyl-7-chloro-1-indene; 2-butyl-4-chloro-1-indene; 2-butyl-5-chloro-1-indene; 2-butyl-6-chloro-1-indene; 2-butyl-7-chloro-1-indene; 2-s-butyl-4-chloro-1-indene; 2-s-butyl-5-chloro-1-indene; 2-s-butyl-6-chloro-1-indene; 2-s-butyl-7-chloro-1-indene; 2-t-butyl-4-chloro-1-indene; 2-t-butyl-5-chloro-1-indene; 2-t-butyl-6-chloroindene; 2-t-butyl-7-chloroindene.

7. An indene of the formula (IIa) or (IIb),



(IIa) (IIb)

where

R^2 is C_1-C_{10}-alkyl and

R^3 is a monocyclic or polycyclic C_5-C_{15}-alkyl group or a CH_2R^4 group,

where

R^4 is a C_6-C_{14}-aryl group, a C_7-C_{15}-alkylaryl group or a monocyclic or polycyclic C_5-C_{15}-alkyl group.

8. The use of indenes of the formula (II) obtainable as set forth in any of claims 1 to 6 or indenes of the formula (IIa) or (IIb) as claimed in claim 9 as intermediates in the synthesis of active compounds or for the synthesis of metallocene complexes.

9. An ansa-bisindenylmetallocene prepared from at least one indene of the formula (IIa) or (IIb) as claimed in claim 7, wherein the two indenyl ligands of the metallocene have different substituents in the 2 position.

10. The use of at least one ansa-bisindenylmetallocene prepared from at least one indene of the formula (II) as set forth in any of claims 1 to 6 or an ansa-bisindenylmetallocene as claimed in claim 9 for the polymerization of olefins.